

## REMARKS

### **Status of the Claims**

Claims 9-11 and 18 have been canceled without prejudice or disclaimer. Claims 12-14 and 19-24 have been withdrawn. Claims 1, 2, 7, and 15 have been amended. New claims 25 and 26 have been added. No new matter has been added. Claims 1-8, 15-17 and 25-26 are pending.

### **Claims 1, 5, 7, 8, and 15 are Allowable**

The Office has rejected claims 1, 5, 7, 8, and 15 on page 3 of the Final Office Action, under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 7,376,144 ("Levi") in view of U.S. Patent No. 5,459,600 ("Davis"), and further in view of U.S. Patent No. 6,831,981 ("Edasawa"), and further in view of U.S. Patent Publication No. 2004/0264400 ("Lee"). Applicant respectfully traverses the rejections.

The cited portions of Levi, Davis, Edasawa, and Lee, individually or in combination, do not disclose or suggest the specific combination of claim 1. The Office admits that Levi does not disclose phase modulation of two signals (ATM and IP). *See* Final Office Action, page 3. The cited portions of Davis fail to disclose or suggest communicating a combined asynchronous transfer mode/internet protocol (ATM/IP) signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1. Davis describes a system including a first modulator  $M_F$  situated in a path 24F, and a second modulator  $M_S$  situated in a path 24S. *See* Davis, Fig. 2. Each of the modulators 26F and 26S modulates an unmodulated source of radiant energy 18 that is input to each of paths 24S and 24F via a splitter 22. *See* Davis, col. 6, lines 49-50, and Fig. 2. In Davis, Modulator 26F applies a first telecommunication signal to a first portion of the radiant energy (unmodulated) passing through optical path 24F. *See* Davis, col. 6, lines 60-65. (Emphasis added). Modulator 26SF applies a second telecommunication signal to a second portion of the radiant energy (unmodulated) passing through optical path 24S. *See* Davis, col. 6, line 65 – col. 7, line 3. (Emphasis added). The cited portions of Davis do not disclose or suggest modulating an ATM signal (that is previously modulated) with an IP signal. The cited portions of Davis do not disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the

combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1.

Further, the cited portions of Edasawa do not disclose or suggest this element of claim 1. Edasawa describes an information transceiver system for transmitting and receiving specific information in which an information transmission device transmits a key message in which a specific information cipher key is ciphered with a usual key and transmits to a destination information reception device a cipher message in which specific information is ciphered with the specific information key. *See* Edasawa, Abstract. In Edasawa, a cipher message generator transmits a ciphered message in which specific information is ciphered with a specific information cipher key to a particular information reception device and also transmits a key message to unlock the specific information, the key message ciphered with a usual key used with the particular information device. *See* Edasawa, col. 4, lines 10-18. (Emphasis added). The cited portions of Edasawa do not disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1.

Further, the cited portions of Lee do not disclose or suggest this element of claim 1. Lee describes an ethernet passive optical network including an optical line terminal to modulate data into frequencies assigned to each optical network terminal, coupling a broadcasting image signal with a communication signal, and transmitting the coupled signal. *See* Lee, Abstract. In Lee, digitally modulated broadcasting/image signals are combined into one signal and then the combined signal is optically modulated into an optical signal having a wavelength  $\lambda_B$ . *See* Lee, paragraph [0035]. In parallel with the formulation of the optically converted broadcasting/image signal  $\lambda_B$ , communication data transmitted from an upper IP network is processed and optically modulated into an optical signal having a wavelength of  $\lambda_{DOWN}$ . *See* Lee, paragraph [0036]. The modulated optical signal  $\lambda_{DOWN}$  is coupled with the optically converted signal  $\lambda_B$  and the coupled signals are transmitted to the ONTs. *See* Lee, paragraph [0036]. The cited portions of Lee do not disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1.

Therefore, the cited portions of Levi, Davis, Edasawa, and Lee, separately or in combination, fail to disclose or suggest each and every element of claim 1. Hence, claim 1 is allowable. Claims 7 and 8 depend from claim 1 and are allowable at least by virtue of their dependence from claim 1.

The cited portions of Levi and Davis, individually or in combination, do not disclose or suggest the specific combination of claim 15. The Office admits that Levi does not disclose a phase modulator. *See* Final Office Action, page 4. The Office also admits that Levi does not disclose phase modulation of two signals (ATM and IP). *See* Final Office Action, page 3.

The cited portions of Davis fail to disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15. In Davis, each of modulators 26S and 26F modulates an unmodulated source of radiant energy 18 that is input to a corresponding path 24S and 24F via a splitter 22. *See* Davis, col. 6, lines 49-50, and Fig. 2. In Davis, modulator 26F applies a first telecommunication signal to a first portion of the radiant (unmodulated) energy passing through optical path 24F. *See* Davis, col. 6, lines 60-65. (Emphasis added). Modulator 26S applies a second telecommunication signal to a second portion of the radiant (unmodulated) energy entering optical path 24S. *See* Davis, col. 6, line 65 – col. 7, line 3. (Emphasis added). The cited portions of Davis do not disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15.

Further, the cited portions of Edasawa do not disclose or suggest this element of claim 15. Edasawa describes an information transceiver system for transmitting and receiving specific information in which an information transmission device transmits a key message in which a specific information cipher key is ciphered with a usual key and transmits to a destination information reception device a cipher message in which specific information is ciphered with the specific information key. *See* Edasawa, Abstract. In Edasawa, a cipher message generator transmits a ciphered message in which specific information is ciphered with a specific information cipher key to a particular information reception device and also transmits a key

message to unlock the specific information, the key message ciphered with a usual key used with the particular information device. *See* Edasawa, col. 4, lines 10-18. (Emphasis added). The cited portions of Edasawa do not disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15.

Further, the cited portions of Lee do not disclose or suggest this element of claim 15. Lee describes an ethernet passive optical network including an optical line terminal to modulate switched data into frequencies assigned to each optical network terminal, coupling a broadcasting image signal with a communication signal, and transmitting the coupled signal. *See* Lee, Abstract. In Lee, digitally modulated broadcasting/image signals are combined into one signal and then the combined signal is optically modulated into an optical signal having a wavelength  $\lambda_B$ . *See* Lee, paragraph [0035]. In parallel with the formulation of the optically converted broadcasting/image signal  $\lambda_B$ , communication data transmitted from an upper IP network is processed and optically modulated into an optical signal having a wavelength of  $\lambda_{DOWN}$ . *See* Lee, paragraph [0036]. The modulated optical signal  $\lambda_{DOWN}$  is coupled with the optically converted signal  $\lambda_B$  and the coupled signals are transmitted to the ONTs. *See* Lee, paragraph [0036]. The cited portions of Lee do not disclose or suggest do not disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15.

Therefore, the cited portions of Levi, Davis, Edasawa, and Lee, individually or in combination, fail to disclose or suggest each and every element of claim 15. Hence, claim 15 is allowable.

#### **Claims 2 and 16 are Allowable**

The Office has rejected claims 2 and 16, at paragraph 4 of the Final Office Action, under 35 U.S.C. §103(a), as being unpatentable over Levi in view of Davis, and further in view of Edasawa, and further in view of Lee, and further in view of U.S. Patent No. 6,479,978 (“Aliahmad”). Applicant respectfully traverses the rejections.

As explained above, the cited portions of Levi, Davis, Edasawa, and Lee, separately or in combination, do not disclose or suggest each and every element of claim 1, from which claim 2 depends. The cited portions of Aliahmad do not disclose or suggest the elements of claim 1 that are not disclosed or suggested by the cited portions of Levi, Davis, Edasawa, and Lee. For example, the cited portions of Aliahmad do not disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1. Aliahmad describes a phase difference to duty-cycle circuit that converts a phase shifted signal and a reference signal into a single signal having a duty cycle that is a function of the phase difference between the two signals. *See* Aliahmad, Abstract. The cited portions of Aliahmad fail to disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1. Therefore, the cited portions of Levi, Davis, Edasawa, Lee, and Aliahmad, separately or in combination, fail to disclose each and every element of claim 1. Hence, claim 1 is allowable over the cited portions of Levi, Davis, Edasawa, Lee, and Aliahmad, and claim 2 is allowable at least by virtue of its dependence from claim 1.

As explained above, the cited portions of Levi, Davis, Edasawa, and Lee, separately or in combination, do not disclose or suggest each and every element of claim 15, from which claim 16 depends. The cited portions of Aliahmad do not disclose or suggest the elements of claim 15 that are not disclosed or suggested by the cited portions of Levi, Davis, Edasawa, and Lee. For example, the cited portions of Aliahmad do not disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15. Aliahmad describes a phase difference to duty-cycle circuit that converts a phase shifted signal and a reference signal into a single signal having a duty cycle that is a function of the phase difference between the two signals. *See* Aliahmad, Abstract. The cited portions of Aliahmad fail to disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15. Therefore, the cited portions of Levi, Davis, Edasawa, Lee, and Aliahmad, separately or in combination, fail to disclose each and every element of claim 15. Hence, claim 15 is allowable over the cited

portions of Levi, Davis, Edasawa, Lee, and Aliahmad, and claim 16 is allowable at least by virtue of its dependence from claim 15.

**Claims 3, 4, and 17 are Allowable**

The Office has rejected claims 3, 4, and 17, at paragraph 5 of the Final Office Action, under 35 U.S.C. § 103(a), as being unpatentable over Levi, Davis, Edasawa, Lee, and U.S. Patent No. 6,608,874 (“Beidas”). Applicant respectfully traverses the rejections.

As explained above, the cited portions of Levi, Davis, Edasawa, and Lee, separately or in combination, do not disclose or suggest each and every element of claim 1, from which claims 3 and 4 depend. The cited portions of Beidas do not disclose or suggest the elements of claim 1 that are not disclosed or suggested by the cited portions of Levi, Davis, Edasawa, and Lee. For example, the cited portions of Beidas fail to disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1. Beidas describes a modulation method employing transmission of a modulation signal including simultaneous interfering pulses to a receiver that is capable of demodulating the modulated signal and compensating for the interference to recover the transmitted pulses and underlying data signals. *See* Beidas, col. 2, lines 35-41. The cited portions of Beidas do not disclose or suggest communicating a combined ATM/IP signal via an optical medium, where the combined ATM/IP signal includes an ATM signal that is phase modulated based on an IP signal, as in claim 1. Therefore, the cited portions of Levi, Davis, Edasawa, Lee, and Beidas, separately or in combination, do not disclose or suggest each and every element of claim 1. Hence, claim 1 is allowable over the cited portions of Levi, Davis, Edasawa, Lee, and Beidas, and claims 3 and 4 are allowable at least by virtue of their dependence from claim 1.

As explained above, the cited portions of Levi, Davis, Edasawa, and Lee, separately or in combination, do not disclose or suggest each and every element of claim 15, from which claim 17 depends. The cited portions of Beidas do not disclose or suggest the elements of claim 15 that are not disclosed or suggested by the cited portions of Levi, Davis, Edasawa, and Lee. For example, the cited portions of Beidas fail to disclose or suggest an optical line terminal (OLT) including a phase modulator configured to phase modulate an ATM signal based on an IP signal

to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15. Beidas describes a modulator that modulates at least two data signals, and includes means for developing for each data signal a pulse of a predetermined shape and combining means for combining the pulses and the data signals to form a combined signal where at least two signal components (that are based on the pulses and on the digital values of the data signals) of the combined signal overlap in time and in frequency. *See* Beidas, col. 2, lines 47-56. The cited portions of Beidas do not disclose or suggest an OLT including a phase modulator configured to phase modulate an ATM signal based on an IP signal to produce a combined ATM/IP signal and to output the combined ATM/IP signal, as in claim 15. Therefore, the cited portions of Levi, Davis, Edasawa, Lee, and Beidas; separately or in combination, do not disclose or suggest each and every element of claim 15. Hence, claim 15 is allowable over the cited portions of Levi, Davis, Edasawa, Lee, and Beidas, and claim 17 is allowable at least by virtue of its dependence from claim 15.

#### **Claims 25 and 26 are Allowable**

New claims 25 and 26 have been added and are supported by the Specification. No new matter has been added. Claim 25 depends from claim 1 and is allowable at least by virtue of its dependence from claim 1. Claim 26 depends from claim 15 and is allowable at least by virtue of its dependence from claim 15.

### **CONCLUSION**

Applicant has pointed out specific features of the claims not disclosed, suggested, or rendered obvious by the cited portions of the references applied in the Office Action. Accordingly, Applicant respectfully requests reconsideration and withdrawal of each of the rejections, as well as an indication of the allowability of each of the pending claims.

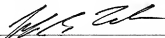
Any changes to the claims in this amendment, which have not been specifically noted to overcome a rejection based upon the cited art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

The Examiner is invited to contact the undersigned attorney at the telephone number listed below if such a call would in any way facilitate allowance of this application.

The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

4/27/2010  
Date

  
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